

REMARKS

In an Office Action mailed March 21, 2005, claims 2-7 and 9 were rejected under 35 U.S.C. 112, first paragraph, claim 2 was rejected under 35 U.S.C. 112, second paragraph, and claims 1-29 were rejected under 35 U.S.C. 103(a) over U.S. Patent No. 6,580,163 (Poulin) in view of U.S. Patent No. 3,868,608 (Williams). These rejections are addressed in corresponding numbered paragraphs below.

1. Regarding the rejection of claims 2-7 and 9 under 35 U.S.C. § 112, first paragraph on page 2 of the Office Action, Applicants respectfully disagree that these claims are not enabled. Applicants clearly disclosed in paragraph [0033] to those of ordinary skill in the art how to make and use the invention. Specifically, Applicants described the use of RF modeling using a computer-aided design (CAD) modeling program to estimate the actual input-to-output isolation. Since distance between the pins affects input-to-output isolation, the distance can be increased until the isolation is sufficient. See paragraph [0027], third sentence. While RF modeling would already be known to one of ordinary skill in the art, Applicants did explicitly describe the use of it.
2. Regarding the rejection of claim 2 under 35 U.S.C. § 112, second paragraph, Applicants note that "said first predetermined amount" has its antecedent in claim 1, line 12.
3. Claims 1-29 were rejected under 35 U.S.C. § 103(a) over Poulin (US Patent No. 6,580,163) in view of Williams (US Patent No. 3,868,608) on page 3 of the Office Action. Applicants note that the Examiner bears the burden of establishing a *prima facie* case of obviousness. Only after the Examiner has met his or her burden does the burden shift to the Applicants to rebut the *prima facie* case.

MPEP 2142 states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable

expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants note, however, that the Examiner has failed to meet his burden of establishing such a *prima facie* case. First, the prior art references when combined fail to teach or suggest all claim limitations. There is at least one element or limitation in each of the rejected claims that is not disclosed or suggested in the combination of Poulin and Williams, even if it were obvious to combine their teachings. Second, there is no motivation to combine the reference teachings as suggested since they are directed to completely different problems.

With regard to claim 1, the combination of Poulin and Williams does not show or suggest an integrated circuit with a semiconductor substrate having "a first pair of bonding pads conducting a differential output signal thereon and adapted to be coupled to an input of a first external filter, and a second pair of bonding pads conducting a differential input signal thereon and adapted to be coupled to an output of said first external filter". Note that Poulin merely discloses unspecified RF signals (see, e.g., col. 3, lines 29-32). Williams discloses a SAW filter, but one with only a single-ended input from the output of amplifier 12 (see FIGs. 1 and 2, and col. 2, lines 26-31). Nothing in Poulin or Williams discloses or in any way suggests an integrated circuit comprising a substrate having a first pair of bonding pads adapted to be coupled to an input of an external filter. Moreover, neither Poulin nor Williams shows or suggests a semiconductor substrate that has differential outputs and differential inputs adapted to be coupled to respective inputs and outputs of the same external filter. Williams does not disclose that amplifiers 12 and 24 are disposed on the same semiconductor substrate, and in 1974 when Williams was filed they most likely were not.

Moreover Poulin and Williams are directed to different problems from each other as well as from the present invention. Poulin is directed to the problem of minimizing bond wire length for RF signals (col. 3, lines 7-9). As the Examiner noted, Williams is directed to providing a SAW filter with a high degree of symmetry and which exhibits improved attenuation at preselected frequencies (col. 3, lines 57-61). However the inventors of the present application discovered that poor input-to-output isolation could affect the excellent characteristics of an external SAW filter (see paragraph [0023]). One of ordinary skill in the art would not have

looked to either Poulin or Williams to solve a problem that was not even recognized by them. Even if the problem was previously recognized in some other, unidentified reference, the different objectives of Poulin and Williams would not have led one of ordinary skill in the art to look to either of them to solve the problem.

Claims 2-14 also have these distinctions by virtue of their dependency on claim 1. In addition, however, they have numerous additional distinctions not shown or suggested by Poulin or Williams or the combination thereof. A non-exhaustive list is provided below.

With regard to claim 2, there is nothing in Poulin or Williams that discloses or suggests making the first predetermined amount correspond to the attenuation in the stopband of the external filter. The Examiner stated that it would have been obvious "to modify the structure as disclosed in Poulin to include the claimed first predetermined amount corresponding to an attenuation in a stop-band of said first external filter, as suggested by Williams . . .". The alleged obviousness only arises from Applicants' own disclosure of the problem. The reason given for Williams making a suggestion to have the distance correspond to the passband is "in order to provide a surface wave filter with a high degree of symmetry and which exhibits improved attenuation at pre-selected frequencies . . .". However, this alleged reason only concerns the quality of the attenuation provided by the filter itself, not the placement of pins that interface to it. Applicants desire to avoid degrading the quality of the filter (whatever that may be) by poor input-to-output isolation is simply not recognized or suggested by Williams. See paragraph [0023].

With regard to claim 3, the argument seems to be that since Poulin discloses terminals, and Poulin discloses terminals separated by other terminals, that a claim reciting that "said first and second terminal pairs are located along a first side of said integrated circuit package and separated by a first plurality of intervening terminals" would have been obvious. However Poulin doesn't say which terminals are in a particular spaced apart relationship to each other nor which ones are located along the same side of the integrated circuit package. Poulin is concerned about the distance between the substrate bonding pads and the package pins, not the separation between pins.

With regard to claim 4, the Examiner reasoned that it would have been obvious to select twelve for two reasons. First, he notes the objective "in order to maintain a constant number of terminals throughout the semiconductor package and between the input and output terminals." However this motivation is nowhere to be found in the prior art. The second reason that the Examiner proffers is that it would have obvious to discover an optimum value, citing In re Boesch as authority. However this case is inapplicable because the need to provide an integrated circuit having first and second terminal pairs for interfacing to an external filter while separating the pairs to provide an input-to-output isolation was not previously known in the prior art. A claimed invention cannot be obvious based on the disclosure of its own Specification.

With regard to claim 5, the Examiner characterizes the limitation "wherein said first plurality of intervening terminals comprises at least one power supply terminal" as an intended use limitation and therefore obvious over Poulin. However that is simply not an intended use limitation. Claim 5 recites an actual feature of an integrated circuit that can either be present or not present in the prior art or in an infringing device, regardless of how it is used. Withdrawal of this rejection is requested.

With regard to claim 6, the Examiner states that Poulin discloses that both first and second terminals of said first terminal pair, and first and second terminals of said second terminal pair, are adjacent to one another. However this statement assumes its own conclusion. If Poulin does not disclose that the integrated circuit even has first and second terminal pairs adapted to be coupled to an external filter, how can Poulin disclose or suggest that such terminals of each pair are adjacent to each other? Withdrawal of this rejection is requested.

With regard to claim 7, the Examiner uses the same, similarly flawed reasoning used with respect to claim 6. Withdrawal of this rejection is also requested.

With regard to claim 8, the Examiner creatively applies the same reasoning as with respect to claim 1, to posit that since Williams talks about a SAW filter that somehow it would be obvious to provide an integrated circuit with two external SAW filters each having input and output terminal pairs separated by distances sufficient to maintain an input-to-output isolation of first and second predetermined amounts. This reasoning is flawed as pointed out above, and

there is nothing in either of the references to suggest an integrated circuit terminal placement to interface to two such filters.

The remaining claims dependent on claim 1 are similar to earlier dependent claims discussed above. Thus the same reasoning applied to claims 2-7 respectively applies to claims 9-14.

Applicants have specifically addressed the rejections of each of claims 1-14 to show why both the rejections themselves and the methodology used to arrive at them are unsupportable based on Poulin and Williams. If the Examiner performs a supplemental search and provides rejections based on new prior art in a subsequent Office Action, Applicants will be happy to review and address such rejections.

With regard to independent claims 15, 21, and 26, as pointed out above, Poulin fails to show or suggest the function of any particular terminals. Williams fails to relate the disclosed SAW filter to integrated circuit terminals. Neither Williams nor Poulin were directed to or even recognized the problem of input-to-output isolation on an integrated circuit having terminals adapted to be coupled to both an input and an output of a filter. Moreover since they were directed to problems that were both different from each other and from the present invention, one of ordinary skill in the art would not be motivated to combine them either in the way the suggested or in any way. The only motivation to arrive at the invention of claims 15, 21, and 26 is found in Applicants' own disclosure.

Thus the combination of Poulin and Williams fails to show or suggest: the placement of bonding pads adapted to be coupled to first and second external filters in four quadrants of the semiconductor substrate as recited in claim 15; the placement of integrated circuit package terminals adapted to be coupled to both the input and output of the same external filter at opposite ends of a side of the integrated circuit package as recited in claim 21; or eight integrated circuit terminals adapted to be coupled to first and second external filters at first and second ends of first and second sides as recited in claim 26.

Furthermore dependent claims 16-20, 22-25, and 27-29 include additional limitations not shown or suggested by the combination of Poulin and Williams. Applicants do not specifically discuss these additional limitations at this time.

Withdrawal of all these rejections is respectfully requested.

CONCLUSION

Applicants respectfully submit that the present application is in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims. If, for any reason, the Office is unable to allow the Application on the next Office Action, and believes a telephone interview would be helpful, the Examiner is respectfully requested to contact the undersigned attorney or agent.

The Commissioner is hereby authorized to charge any fees that may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

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